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Meeting abstract

Spin trapping experiments with ethyl-substituted EMPO derivatives (EEMPO)

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Free radicals in biological systems play a major role in the onset of many diseases, e.g. oxygen-centered radicals such as hydroxyl or superoxide radicals. In order to identify and localize these radicals a series of four novel spin traps have been developed and their structure fully characterized by [^{1}H]- and [^{13}C]-NMR spectroscopy as well as mass spectrometry. The novel compounds can be described as ethyl-substituted EMPO derivatives, namely 5-ethoxycarbonyl-3-ethyl-5-methyl-pyrroline *N*-oxide (3,5-EEMPO), 5-ethoxycarbonyl-4-ethyl-5-methyl-pyrroline *N*-oxide (4,5-EEMPO), 5-ethoxycarbonyl-5-ethyl-3-methyl-pyrroline *N*-oxide (5,3-EEMPO) and 5-ethoxycarbonyl-5-ethyl-4-methyl-pyrroline *N*-oxide (5,4-EEMPO). Their spin trapping behaviour towards a series of different oxygen- and carbon-centered radicals is described. All compounds were obtained in two different stereochemical forms (*cis* and *trans*), but only 3,5-EEMPO and 5,3-EEMPO could be separated into the different diastereomers using conventional chromatographic procedures. The *cis*- and *trans*-forms exhibited considerably different spectral parameters and stabilities of the respective superoxide adducts (ranging from about 12 to 35 min). In addition, spin adducts obtained from different carbon-centered radicals derived from methanol, ethanol, formic acid and linoleic acid hydroperoxide have also been characterized.